

Management of constipation

1 High fibre diets work

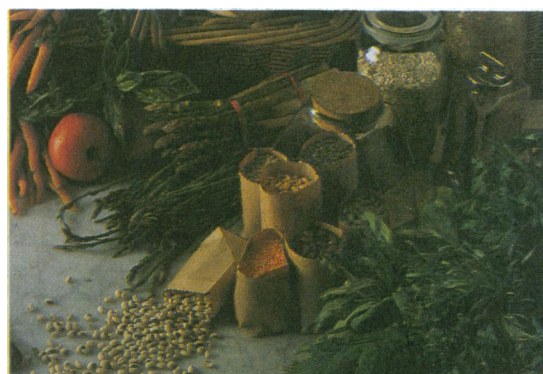
Rodney Taylor

Constipation is a common symptom. Most definitions of constipation include infrequent bowel action—twice a week or less—that often require straining to pass hard faeces. Sensation of pain and incomplete evacuation are sometimes associated.¹ In the early 1980s general practitioner statistics showed that more than 400 000 patients annually attended with constipation as their main complaint. This 1% of the adult population is only a small proportion of those who suffer from constipation. Ten per cent of the British population are regularly constipated, rising from 3% in young adults to 20% or more in elderly people.² Constipation is commoner in women than men because of slower intestinal transit. An additional similar percentage of people regularly take laxatives, aperients, or foods in their diet either to avoid constipation or in the belief that they need to keep their bowels “regular.” In the United States, parts of northern Europe, and Japan the percentages are even greater, in contrast with Third World countries, where constipation is no problem.

Fibre in the diet

Change in dietary pattern is one of the main causes of the high prevalence of constipation in the Western world. Refining of food began in the Industrial Revolution. Since then there has been a steady fall in the consumption of starch and fibre with a corresponding increase in the intake of sugar, fat, and protein. In England in the 1860s 66% of dietary energy came from carbohydrate, and 78% of this was starch. A hundred years later only 46% of energy came from carbohydrate, of which 56% was starch. Over this period there was a reciprocal rise in the prevalence of constipation. Dietary fibre comes from plant foods and is intimately related to starch. Refining processes extract fibre, increasing energy density and usually popular palatability. The intake of dietary fibre has been declining steadily from about 40 g/day 100 years ago to a current value of 15–20 g/day in most Western countries. Vegetarians may still consume 40 or more g/day, but many slimming diets provide less than 10 g/day. Traditional African diets as consumed by humans during their evolution as omnivores contain 50–150 g/day. Diets based on cereals, legumes, and root vegetables as the staple source of carbohydrate have the highest fibre content.

Dietary fibre is a portmanteau term for a widely diverse group of complex or non-starch carbohydrates of differing chemical structure and physical properties



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Cereals, legumes, and root vegetables have a high fibre content

that are not digestible by human intestinal enzymes. Cellulose and lignin are recognisably fibrous or particulate, whereas the non-cellulose polysaccharides (gums, mucilages, algal polysaccharides, pectins, and hemicelluloses) are soluble and largely viscous. In general, particulate fibres have the greatest effect on colonic function and viscous polysaccharides modulate absorption in the small intestine. A mixed high fibre diet will contain a wide selection of different fibres with differing properties and biological effects. It is not necessarily equivalent to a refined diet supplemented with bran.

Effects on constipation

Constipation is primarily a colonic problem. In the colon fibre increases stool bulk, holds water, and also acts as a substrate for colonic microflora, further increasing stool bulk by increasing bacterial, water, and salt content³ and producing hydrogen, methane, and other gases that augment the bulking effect. It decreases transit time, reduces intracolonic pressure, and produces a softer stool.⁴ All these effects are beneficial in relieving constipation, but the evidence comes mainly from studies on normal colons. An additional 20 g/day of bran increases faecal weight by 127% and decreases mean transit time by 41%. The same quantity of cabbage, carrot, or apple fibre produces a smaller but similar effect.⁵ Large particles of bran give significantly greater increases in stool weight and water content with significantly shorter transit times than finely ground bran.⁶ Raw bran is more effective than processed bran.⁷ Transit time is reduced by fibre most noticeably in those with slow

EDITORIAL COMMENT

These two articles represent not so much a controversy as a progression of treatment dependent on patient response. There is little doubt that a diet high in particulate fibre should alleviate constipation in many patients, but such diets are not

particularly palatable and compliance is likely to be poor. When this approach fails it is appropriate to try other strategies, and it is noteworthy that stimulant laxatives do still have a place in the management of constipation, provided their use is limited in terms of both dose and frequency of administration. —PETER C RUBIN, *professor of therapeutics, University of Nottingham*

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intestinal transit and may increase in those with naturally rapid transit.⁸ Meta-analysis suggests that the same effects of bran in healthy controls are also found in patients with the irritable bowel syndrome, diverticular disease, and chronic constipation. Constipated patients, however, have lower stool weights and slower transit than normal subjects whether they take bran or not.⁹ Interestingly, not only plant fibre in the strict definition but also the fibrous content of meat in the carnivorous diet of Eskimos and even plastic particles have similar effects.⁴⁰

Scientifically well controlled studies of the effects of increasing the intake of dietary fibre in the management of constipation are few. Most have studied the effects of added bran on stool weight, stool frequency, and transit time and have shown that subjects passed bulkier, softer stools more frequently with shorter transit times when taking bran.¹¹ An increased intake of all forms of dietary fibre has a similar effect, though there are even fewer controlled studies and much evidence is anecdotal.

Some constipated people find the secondary effects of fibre—namely, flatulence, distension, and bloating—sufficiently insufferable that they cannot tolerate enough fibre to alter constipated colonic function.¹² Many of these effects reduce with time, probably owing to alterations in colonic microflora, and can be minimised by increasing fibre intake gradually. A small group of young women with “idiopathic slow transit constipation”¹³ and others with difficulty in rectal expulsion¹⁴ are not helped by an increased intake of fibre, but they are a tiny minority of those with constipation.

Development of the bran wagon

High fibre diets can help relieve constipation naturally in almost all patients, including those with the irritable bowel syndrome. The benefits may be limited by poor tolerance and by dietary inflexibility, particularly in elderly people for whom supplements may be better than changing eating habits. Fibre intake should probably be mixed and increased gradually over weeks or even months. Wheat bran is most effective in relieving constipation, though it is less palatable and often poorly tolerated by those used to a refined diet.

The benefits of wholemeal foods in constipation have been known since ancient times. Bran was identified as the essential factor in the nineteenth century by Allinson and subsequently by Kellogg, Dimock, and others.¹¹ In the second world war Cleave carried out crucial clinical experiments at sea¹⁵ and subsequently stimulated the new wave of interest in fibre.¹⁶ Burkitt, Trowell, Painter, and others combined epidemiological and clinical observation to postulate the “fibre hypothesis,” which attempted to attribute many Western illnesses in addition to constipation to a low intake of fibre or a high intake of refined carbohydrates.¹⁷ By the early seventies the bran wagon was rolling enthusiastically. Time has shown that not all claims for the benefits of high fibre diets can be substantiated¹⁸ but certainly in relieving constipation, high fibre diets work.

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2 When fibre fails

Robin Spiller

Donald Burkitt's hypothesis that many of the ills of Western people, including constipation, were caused by a fibre depleted diet¹ certainly caught the imagination of a generation. So much so that many patients currently consulting their general practitioner complaining of constipation will have already tried unsuccessfully some form of high fibre diet.

This lack of success is due either to intolerance or to ineffectiveness. Intolerance reflects the fact that high fibre foods are an acquired taste, require more chewing, and entail major changes in cooking habits that patients may find difficult to accept. Furthermore, some fibre supplements—for example, raw bran—are distinctly unpalatable. An effective dose of fibre (20 g) requires the ingestion of six tablespoonfuls of bran or two Weetabix and four large thick slices of wholemeal bread (300 g) or their equivalent. Defective dentures and failing appetite or imagination may make such an increase in intake unacceptable. Purified fibre supplements such as ispaghula (Fybogel) or sterculia

(Normacol) may be more acceptable for such patients in producing a softer, bulkier stool that is easier to pass. Lactulose is also effective, though rather expensive, and its oversweet taste does not appeal to everyone. Those who do successfully increase their intake of fibre, by whatever means, often experience the effects of increased bacterial colonic fermentation with accompanying flatulence, abdominal distension, and colic, which in some patients are sufficiently severe to lead to discontinuation of treatment.²

Alternative approaches

Although high fibre diets are undoubtedly effective in those with normal colonic function, unfortunately, those with slow transit who are likely to need the most help tend to show the least effect.³ A slow transit seems to favour a more complete bacterial degradation of fibre in the right colon, thus minimising the effect of fibre on faecal output. Furthermore, after a few weeks